GAS JOURNAL

Vol. 256 **December 8, 1948** **No. 4462**

DEPUTY CHAIRMEN OF AREA BOARDS

WITH commendable speed following the appointments of the Chairmen of the Area Boards announced in the House of Commons on Nov. 5, by the Ministry of Fuel and Power, and published in the "JOURNAL" of Nov. 10, Mr. Gaitskell informed Parliament on Friday last of the appointment of the Deputy Chairmen of seven out of the 12 Area Boards. The names, together with biographical notes, are given in the "JOURNAL" to-day, and to our mind they convey a further measure of reassurance concerning the future operation of the gas industry under nationalization. The Gas Council, consisting of the Chairman and the Deputy Chairman, and, as members, the Chairmen of the Area Boards, has in its counsels a predominant weight of men of high and proved ability in either gas administration or gas engineering or in both; and now, with a more complete picture of the personnel of the Boards, we find, with every satisfaction, that a happy sense of balance has been attained and that what we may term the "pairing" of the Chairmen and Deputy Chairmen of the Boards is likely to result in enterprise based on full knowledge of the particular problems of development involved. From our meeting with those Area Board Chairmen hitherto not within the gas industry we have been impressed not only by their public spirited zeal in their current approach to their new tasks, not only with their desire, on occasion already publicly expressed, to approach problems with an open mind in wholehearted co-operation in a common aim, but with their admiration of the achievements, made without fuss but not without effort, of a régime which is now to undergo transformation. We now await the announcement of the remaining Deputy Chairmen of the Boards. We do so in the belief that the final picture will command respect and inspiration.

COKE FOR THE OPEN FIRE

THE production by high temperature carbonization, by manipulation of the standard methods of control of throughput and steaming in the standard continuous vertical retort, of coke for use in the open fire may be characterized as "response to challenge." The work at Birmingham shows that, supplemented by selection of coals, the challenge can be met. Whether the response is capable of nation-wide extension, and whether it is likely, in the long run, to secure the survival of coke in the open fire as a successful means of meeting the winter peak loads of space heating, are questions to be dealt with later. Let us first examine the Birmingham response.

The work reported at the autumn research meeting of the Institution of Gas Engineers, by Mr. T. F. E. Rhead and E. T. Pickering, was carried out in a period of 15 years ended in 1939, most of it in the last five years of that period. The date is important because there was then no anxiety about the ash content of the coals normally used. Of the 30 different coals in use 50% came from Yorkshire and 50% from the Midlands, and of the latter only "certain" coals (Nottinghamshire in particular) "when carbonized in continuous verticals gave a readily ignitible and free-burning coke." These attributes were defined objectively and with a fair degree of accuracy in terms of the time taken for a particular fire to reach the "cheerful state," which desirable condition was itself defined as that in which the radiation emission reached 5,600 B.Th.U. per hour. The particular fire for this test was a 14 in. coke-burning grate of proprietary make with gas ignition standardized at 8 cu.ft. of gas (equivalent to 3,800 B.Th.U.) burned in 12 minutes. Cokes attaining the "cheerful state" in half-an-hour or less were classified as "very good." "Good" marks were awarded to as much as 33 minutes. Over this was "moderate," while cokes of "poor" combustibility apparently failed to ignite in the 12 minutes. These tests were carried out with coke "as received"—that is, with such moisture content as it might have on the sales deck—but they were supplemented by tests of oven-dried coke in a well-grate of the ordinary type with stool bottom, ignition being achieved (or not) with 1¼ lb. of kindling wood. These details are important because it is necessary to keep very clearly in mind just what is meant by success in the open fire.

The findings of the enquiry are in many respects most instructive. It is not, indeed, surprising to find that ease of ignition and burning is dependent on the quality of the coke substance and that this depends mainly on the chemical and physical properties of the coal carbonized. But it is interesting to note that the quality of the coke substance is not detrimentally affected by increasing the ratio of steam to coal in the carbonizing process; generally, the reverse is the case. Theorists used to maintain that steaming resulted in the deposition of graphite on the surface of the coke pieces which hindered their ignitibility—or words to that effect. Low bulk density indicates good combustibility; it is interesting to note that the difference in respect of this property between "good" and "poor" combustibility is very much less than that between coke made in continuous verticals and that made in systems with static charges. It would be still more interesting to see these tests extended to cokes from the same coals carbonized in intermittent systems. The bulk densities of cokes thus derived would be considerably greater than those reported here. Would they all be complete failures? Another observation is that the grade of coke excellence is also roughly in the inverse order of the B.S. swelling number of the coal. A good many figures were given to show the effect of varying the retort throughput and the steaming ratio, but as far as we can see there seems little advantage in departing from those conditions which appear to give optimum gas-making results as regards both make per ton and production per retort. The coals giving the best cokes are those which "take the steam" best; in other words, they are coals which could be steamed to produce gas of comparatively low calorific value

(we are thinking of 450 B.Th.U. per cu.ft. or a little less) with increasing fuel and thermal efficiency, whereas the Yorkshire coals seem to reach the optimum at about 475 B.Th.U. per cu.ft.

Ash in coke always has a bad psychological effect on the housewife, even when it is no more (and in these days it is never less) than the 6% allowed by the Codes. Why does she hate it more than an equal proportion in the coal? Is it because the ash is generally in a finer state of division than with coal, or is it just because there is a greater bulk of fuel in the fire? Whatever the answers may be to these questions there is no doubt at all that the "flying-bat" is a source of annoyance and even of positive danger. Though the Birmingham investigators have gone some way in the steps necessary to eliminate this "nigger in the wood-pile" it is to be feared that the installation of a picking belt to remove bats from the coal is not a practicable solution of the problem. Just one other observation should be made. There should now be an end of the myth that the presence of moisture in coke "as received" has any beneficial effect on its combustibility.

"WITHDRAWAL AND RETURN"

BUT what is the effect of this work reported to the Institution on the general long-term policy of the gas industry? Have we here any assurance that it is possible or desirable to encourage the householder in the continued use of the open fire? Given freedom of choice, is there any strong case for the preference of coke over coal? In the short term, in view of the large numbers of open fires still in use and of the slowness with which in the present economic situation these can be replaced by more rational, more economical, and more efficient appliances, we have nothing but admiration for the work of the Birmingham staff. But there is not only "response to challenge," but "withdrawal and return." Ought we not to admit, freely and frankly, that coke is *not* a very good fuel for the ordinary open fire grate? Ought we not to persist in the view that, just as we need a specialized appliance in which to burn our gas, so we need a specialized fire or furnace in order to get the best out of our smokeless solid fuel? We must admit, of course, that, in spite of the many instances in which the all-gas house has been proved to be as cheap both in coal and money as the prevailing mixtures of coal and gas (besides being incomparably cleaner and more convenient) we cannot hope yet to go over to all-gas as a national policy. The winter peak, it is apparently proved, must be met by coke stored either at the works or in the home. Stored at the works it may some day be found a paying proposition to gasify it there. But if it is to be stored and used in solid form in the house, at least it should be used, as it can be used, in appliances in which its efficiency can be twice or more as high as in the ordinary open fire-grate, and in which the "flying-bat" can be robbed of its terrors. We should "withdraw" from the impossible position of seeking to segregate a few particular coals to produce a fuel which at best is not very good when used in an appliance which gives a very poor performance even when supplied with the best, and we should "return" with the neat, clean, efficient, closed and openable appliances designed for the job which are now available for use with coke—appliances which also have the advantage that they are not very particular about some of the finer points which received so much careful and skilful attention at Birmingham.

COKE BREAKERS

IT was fortunate that after the Birmingham paper we went straight on to the work of the Gas Research Board's staff (reported by Mr. V. T. Taylor and Dr. D. Hebden) on the smaller problem of coke breakage. It appeared the smaller because we remembered that the domestic coke used in Birmingham was the "natural fraction" of the run-of-retort coke through 2 in. and over 1½ in. mesh. It would be very nice indeed if this most useful grade of coke could always be obtained in sufficient quantity by screening, as we believe it very often can, without the necessity of breaking at all.

GRB 42 is only an interim report and one must have patience with it. It did seem, however, to have arrived at very little more than what one may call common-sense conclusions, to have done very little more, that is, than confirm what every designer and user of coke grading plant has always assumed. Never use the breaker if you can possibly avoid it. Above all, never pass through the breaker any coke which does not need breaking. In short, never handle any of the coke more than is necessary. Scalping should be looked at as an operation in which the larger sizes are taken right out of the stream, and only that fraction which requires breaking to make up a deficiency in the "natural fraction" should be returned to the breaker. Perhaps Mr. Taylor and Dr. Hebden are a little too guarded about the applicability of their conclusions. Some of them seem to be general. The first two, for instance, seem to confirm the view that large coke should be "cracked" rather than crushed, though in some designs the aim is to "cut" it, with what success is doubtful. The conclusion arrived at in regard to two-stage breaking is somewhat surprising, and the screening after each breaker would seem to be the reverse of present practice and yet to be fully justified by the results.

But one feels that, after all, the main problem is still the design of the breaker itself. It is by no means sure that the two-roll machine is the best or even that finality has been reached in that type of machine. There is, for instance, a single-roll machine, with a breaking plate similar to that of some coal breakers, but with the roll in the form of helical cutting edges, which has given good service with low breeze formation. We should remark here that when makers specified the test breaker as having a capacity of so many tons per hour they very wisely, we think, refrained from going into too much detail about roll setting or size of product. The capacity of any breaker, coal or coke, varies over very wide limits according to the nature of the material fed to it as well as the other variables referred to.

It is to be hoped that this investigation will be continued with trials of most of the types of machine now in use. The conclusion that a pilot test with quite a small quantity of coke is found to give reliable comparative results may encourage the Gas Research Board to go all out in this direction.

A SIMPLE LITTLE BILL?

IS the Coal Industry Bill the "simple little measure" Mr. Alfred Robens claimed it to be when he moved the Second Reading in the House of Commons last week? On the face of it, yes—but the Opposition found a great deal to worry them in its two short parts "designed to amend" the 1946 Coal Nationalization Act and the 1911 Coal Mines Act "in the light of experience gained while they have been in operation." Not to be put off by Mr. Robens's "bedside manner," the Conservatives forced a debate on the whole structure of the coal industry, but they were concerned more with what the Bill fails to do than with what it does in the way of modifying the structure of the Coal Board, authorizing it to set up selling agencies abroad, to terminate certain contracts, and to do more with regard to the health and safety of the miners. If the House was to concern itself with modifications in the light of experience, why should it not do the job properly and not merely fiddle about with the appointment of a few extra members of an already top-heavy administration? A few members managed to throw political red herrings across the path of the debate when they had been given a clear field by the

Conservative motion to reject the Bill for its sins of omission, but the net result was a reasoned deliberation on the National Coal Board's two years of work.

The Tories' heavy guns came from the armoury of Sir Charles Reid and Colonel C. G. Lancaster, whose recently published statements provided most of their effective material, and from the Board's own publication of an edited version of the report of the Burrows Committee on its structure. What had the Board achieved in its two year's operation? This was the Conservatives' rhetorical question, answered by claims that it had raised a "bulging bureaucracy" which had lost the confidence of miners and technicians alike, had poured away public money, and had failed to reach targets set it by the Government. They wanted to see the technicians at Area level given more authority and the Board to be reduced to supervisory and administrative functions, and though at times they seemed to suggest that Sir Charles Reid was the only man qualified to direct the operations of the coal industry, they made out a reasoned case for some reorganization, if not the revolution they appeared to be planning. Production, said Mr. Brendan Bracken, was really a task for managers and miners, who understood each other. The miners would respond to able leadership from men they respected through their constant contact with them at the pit. He wanted control of the industry moved away from Hobart House and much nearer the pits. Until that was done there would be no health in the industry.

This speech was reinforced by a statement by Colonel Lancaster himself, who believed that, as a result of the two years which had elapsed, the structure of the Coal Board was misconceived and the Area Boards were unsuitable for their task. Production and administration were two separate functions, and it was to be hoped that in due course sufficient technical men would gain administrative experience to enable the majority of Area Chairmen to be technicians. What he conceived to be required, as does Sir Charles Reid, was an organization at the Area level which would enable production to function with maximum efficiency. The main burden of administration should be removed from its shoulders and there should be an opportunity of having decisions given as matters arose day by day, and not, as at present, by formal consultation with divisional boards at monthly intervals. If twelve months were given to making such changes, they could be carried out efficiently and smoothly.

The Labour reply was that the Board had to be given time to work out solutions to problems inherited from pre-war Conservative Governments, and speakers challenged the validity of some of the facts and figures quoted by the other side. They could not, however, disguise the fact that there was on their side of the House, too, a feeling that some form of reorganization was needed.

Replying for the Government at the end of the debate, the Minister of Fuel and Power, Mr. Hugh Gaitskell, argued that there was no point in the amendment unless the Opposition faced the issue that the Board could make a great deal of change in its organization within the framework of present legislation. He agreed that the problem of getting greater production could not be met merely by exhortation, but in a large-scale organization there were problems of human relationships and of delegation which became more complicated as the organization grew larger. Changes had been made by the Board without Ministerial approval or concurrence, and it was always the intention of the Board that the Areas and not the divisions should be the truly executive operational units which employed the labour and mined and sold the coal. There was no doubt that as area management developed the divisional boards would become more and more merely co-ordinating and supervizing bodies, handling certain questions which would otherwise have to go to national level.

Mr. Gaitskell said that he was unwilling to impose any changes on the Board, but Mr. Robens made it clear that the Government was willing to consider amending legislation later—"the time will come when the Act has behind it sufficient years for us to have had reasonable experience of its operation." When this would be was not stated. Some members on the Labour side spoke of a period of five years, but this still leaves unanswered the question of whether the country can afford to wait so long. Britain is committed to a four-year plan for the fulfilment of the Marshall aid programme but the record of the Coal Board in failing to reach targets is no encouragement to a belief that it will succeed this time. In addition, while the Government pursues its Asquithian policy of "wait and see," the industry and housewives alike are crying out for more, better, and cheaper coal.

The Conservatives have been advocating a second revolution in the coal industry which might cause greater difficulties than exist now. We pointed out last week that the National Coal Board, as guardians of the nation's coal supply, could not risk dislocation. The Government, however, left the Board in 1946 to work out its own detailed organization and, if the Board accepted the responsibility then, it cannot be allowed to shirk the present task of making such changes in its creation as now seem necessary. It is possible that the changes could best be made while the Board is still young and flexible, while Sir Charles Reid, with all his expert knowledge of the dangers, seems to believe that the risk is worth while.

We urgently need what Mr. Gaitskell calls "production at minimum cost of the total quantity of coal required to meet home and export demands at prices which enable the Coal Board to pay its way," but if the present organization moves in this direction too slowly and there is a likelihood that changes might increase the pace, there is no excuse for the Board and Government passing the baby from one to the other. The Board might make a good start on its reforms by making publicly available the full text of the Burrows Committee report.

A TRIBUTE

The first of the series of autumn research meetings of the Institution of Gas Engineers was held in November, 1929, under the Presidency of Mr. C. S. Shapley, who, together with the Council, was instrumental in inaugurating the research meetings, which have had great value as an organized—a well organized—pointer at a national level to the achievements and aspirations of the gas industry in this highly specialized sphere of its activities. Mr. Shapley is, at the end of this month, to relinquish his full-time executive duties in the industry after a career both notable and strenuous. It was singularly fitting, therefore, that at the research meeting—the fourteenth of the series—on Nov. 24, the President, Mr. E. Crowther, should refer to the part which Mr. Shapley played and ask him to "say a few words." Mr. Shapley, addressing the meeting, said that at one time it was not the unanimous wish of the Council that there should be a research meeting; the "older members" thought it would be a failure. Maybe he was at the time regarded as left-wing, but he did not lose heart. And on Nov. 24 last he had the satisfaction of participating in the proceedings of a meeting, the success of which, in common with many of its precursors, vindicated his judgment and his faith.

STUDENTS ABROAD

What is known as the "Vacation Work Scheme" of the Imperial College of Science and Technology—a system under which students spend their holidays working at home or overseas—had another year of progress in the 12 months ended October, 1948. The scheme continues to attract a large proportion of the students of the College in spite of its voluntary nature for all except those from the Mining and Metallurgy Departments of the Royal School of Mines, an abstract from the Fourteenth Annual Report to the Governors declares. During 1948, there was a total of 829 registrations compared with 705 in 1947, an increase mainly accounted for by the growth of the number of overseas students to 200. The average of these students earned £3 6s. 2d. a week for his holiday work, while 73% of them received less than £3 a week. The average rate for overseas students employed in

Britain is £3 13s. 4d. a week, only 20% receiving less than £3 a week. This difference arises from the fact that firms tend to pay more to overseas students because they have to spend more on travelling and subsistence. A similar situation comes about in regard to British students who travel abroad for holiday work. The international exchange of students commenced in 1946 with 46 British and foreign students taking part, a number which increased in 1947 to 222. The procedure of exchanging students has been simplified by the establishment of the International Association for the Exchange of Students for Technical Experience, an organization which has had the blessing of the Ministry of Labour. The Governors of the Imperial College have decided that in 1949 the machinery that has been evolved shall be broadened to include undergraduate students from other universities and university colleges in this country, a number of which have already indicated their interest. How welcome this move should be will be seen by anyone who studies the list of industrial concerns at home and overseas who have given hospitality to students so that they may gain practical experience, a list bewildering in its variety and thoroughly representative of the industry of this country and other European nations.

KEEPING WARM

Mrs. E. Fraser-Stephen, M.A., is a Canadian who as Organizing Secretary of the Women's Advisory Council on Solid Fuel, now five years old, brings to her campaign for more warmth and comfort in our homes by the greater use of solid fuel appliances, an appreciation of fuel supply difficulties, a knowledge of what other countries are doing in this sphere, and of what has been done in this country in the past. Her remarks at a meeting of the Royal Society of Arts, reported in this issue, dealt with solid fuels generally, chiefly coal, but there can be no doubt that her case is a powerful argument for those who wish to see the gas industry regarded more and more as a two-fuel one. Mrs. Fraser-Stephen's interesting contribution contained a description of recently developed heating appliances which are now being marketed in America. These consist of a basic unit with separate heating "packages" for coal, gas, or oil, which can be fitted by the householder himself. It is doubtful whether these would prove useful in this country while fuel remains in short supply and so long as the supply of appliances burning the alternative fuels are available in quantities sufficient to meet individual demands. A speaker at the meeting suggested that salesmanship *per se* might become the main selling factor for these appliances rather than quality of the appliances themselves.

Personal

Mr. F. W. CANTRILL has been appointed Midland Representative for A. G. Sutherland, Ltd., Birmingham. For several years before the war Mr. Cantrill was their Representative in the North of England.

* * *

Mr. ROBIN H. BENNET has been appointed by Alder & Mackay, Ltd., as representative in the Midlands Area and Wales. He was on service in Palestine and Egypt until this summer as a Captain in the Cameron Highlanders, and it is of interest to note that, as the eldest son of Mr. Harold E. Bennet, he represents the fourth generation of his family in the service of the Company.

* * *

Mr. E. BATES, Sales and Service Superintendent, City of Nottingham Gas Department, has been appointed Chairman of the Technical Panel of the Yorkshire Industrial Gas Centre, in succession to Mr. R. H. Anderson, Industrial Superintendent, Bradford Corporation Gas Department. Mr. G. DAVIES, Distribution Superintendent, Great Grimsby Gas Company, has been appointed Vice-Chairman.

* * *

Mr. P. N. LANGFORD, who retired in September, 1945, after 27 years' service as Engineer and General Manager of the Coventry Gas Department, has accepted the invitation of the Directors of the Rugby Gas Company to succeed the late Mr. R. J. Meiklejohn as Engineer, Manager, and Secretary of the Rugby undertaking until vesting date under the Gas Act and thereafter for such period as the West Midlands Area Gas Board may determine.

* * *

Mr. C. JAMES, M.Inst.Gas E., M.Inst.F., who recently resigned from Whittaker Ellis, Ltd., Birmingham, has accepted the Managing Directorship of a newly formed company of Gas, Water, and Civil Engineering Contractors, namely, Distributing Engineers (Birmingham), Ltd., 282, Penns Lane, Sutton Coldfield, with depôts in Birmingham and Manchester and takes over his duties on Jan. 1. Mr. James served his articles with the Salford Gas Department from 1919 to 1924 and held technical administrative positions on the manufacturing and distribution sides of the industry with the same undertaking until he joined his last firm in August, 1945.

PRESENTATION TO MR. G. C. PEARSON

Mr. George C. Pearson, O.B.E., whose retirement from the post of Engineer-in-Chief of Birmingham Gas Department has already been announced, was recently entertained to a farewell dinner by the chief officials. Mr. Alex. W. Lee (General Manager and Secretary) presided and made a presentation to Mr. Pearson on behalf of the staff.

Before the presentation Mr. Lee said it could be claimed that Mr. Pearson was one of the foremost members of the profession of gas engineers. He had already been a pioneer, and the work he had done on behalf of the industry and the contributions he had made to the proceedings of the Institution were well known. His tenure of office as Engineer-in-Chief had been a period of unprecedented difficulty, due largely to the dangerous and abnormal circumstances created by the war, but he initiated and successfully completed large scale extensions to the gas-works, which had enabled the Department to meet the ever increasing demand for gas. One of his most successful efforts was the introduction of the cement gun method of repairing ferro-concrete structures. They were all familiar with the splendid work he had performed in connexion with the reconstruction of the Saltley and Nechells Works, and his layout for a new gas-works at Swan Village, which would cost approximately £2 mill. The scheme incorporated some outstanding features which were entirely new in gas-works practice.

It was imperative, if the Department was to maintain its output, that new gas-works must be constructed at Washwood Heath; and if he was successful in obtaining the additional land required for this purpose, Mr. Pearson's plans for the new works were such that when the scheme was completed the works would constitute one of the largest and best equipped in the country.

Several other officials spoke in appreciation of their old chief, and in acknowledgment Mr. Pearson thanked them for their ready co-operation and the goodwill extended to his wife and himself. He was grateful to Mr. Lee for his kind words and the manner in which they had received them, and for their generous gift, which would remind him of his long association with them.

Letter to the Editor

Meter Lubrication

DEAR SIR,—The open top gas meter tends to go slow and finally "draws light." It then becomes seized for lack of lubrication at the stuffing boxes. It might be argued that powdery deposits from the mains are responsible. If so, precaution should be taken by the manufacturer of the meter. All that is necessary is to fit a filter across the opening to the valve plate.

Yours faithfully,

R. WHITECROSS.

39, Eliot Crescent,
Hamilton,
Lanarkshire.
Nov. 30, 1948.

Diary

Dec. 9.—**Midland Counties Coke Association**: Central Committee, King Edward House, New Street, Birmingham, 2.30 p.m.

Dec. 10.—**Scottish Junior Gas Association (Western District)**: "Income Tax in Gas Undertakings," James Donnelly, F.I.A.C., Accountant, Glasgow Gas Department.

Dec. 11.—**Yorkshire Junior Gas Association**: "The Application of Two Recent Burner Designs," P. F. Kirby (Bradford). Bradford.

Dec. 14.—**Midland Salesmen's Circle**: "Survey for Salesmen," R. J. Gregg, Sales Manager, Ascot Gas Water Heaters, Ltd., Birmingham Chamber of Commerce, 2.30 p. m.

Dec. 15.—**British Coke Research Association**: Third Conference, "A Study of the Pressures Developed by British Coals During Carbonization," the Royal Institution, Albemarle Street, London, W.1, 3 p.m.

Dec. 15.—**Scottish Junior Gas Association (Western District)**: Visit to R. & A. Main, Ltd., Falkirk.

Dec. 16.—**Midland Junior Gas Association**: Film evening, Wolverhampton.

Dec. 17.—**London and Southern Junior Gas Association**: "A Background to Some Economic Problems in the Gas Industry," D. G. Rose, B.Sc., Gas Light and Coke Company. Gas Industry House, 7 p.m.

Dec. 21.—**Industrial Gas Development Committee.** Gas Industry House, 9.30 a.m.

AREA GAS BOARDS: DEPUTY CHAIRMEN NAMED

MR. HUGH GAITSKELL, Minister of Fuel and Power, informed Parliament on Friday last that he proposes to appoint the following as Deputy Chairmen of the Area Gas Boards to be set up under the Gas Act, 1948.

Scottish Gas Board.—Mr. D. D. BURNS, General Manager, Glasgow Corporation Gas Department.

North Eastern Gas Board.—Mr. G. E. CURRIER, General Manager, Bradford Corporation Gas Department.

West Midlands Gas Board.—Mr. G. A. MATTHEWS, Secretary, Birmingham & West Midland District of the National Union of General & Municipal Workers.

Wales Gas Board.—Mr. R. S. SNELLING, General Manager, Severn Valley Gas Corporation, Director, General Manager, and Secretary, Newport Gas Company.

Eastern Gas Board.—Mr. J. H. DYDE, General Manager, Slough Gas and Coke Company and Uxbridge and District Gas Company.

North Thames Gas Board.—Mr. F. M. BIRKS, C.B.E., Deputy Governor and Managing Director, Gas Light and Coke Company.

Southern Gas Board.—Mr. S. E. WHITEHEAD, Managing Director, Southampton Gaslight and Coke Company.

The salary for the post of Deputy Chairman of Area Gas Boards has been fixed at £3,500 per annum. Five appointments remain to be made.

In the case of one Board in which an officer of a gas undertaking has an existing contract at a higher salary he will receive a personal addition to the salary of £3,500. Deputy Chairmen will be entitled to an allowance of up to £400 per annum for expenses.

The names of the Chairmen of the 12 Area Gas Boards were announced on Nov. 5 and were published in the "JOURNAL" of Nov. 10 (pp. 325-326).

Personal Notes

Mr. **D. D. Burns** (Scottish Gas Board) was appointed General Manager of the Glasgow Gas Department in January, 1947. He joined the City Gas Department on leaving school and in 1935 was appointed Secretary and Treasurer of the Gas Department, becoming Commercial Secretary and Deputy Manager four years later. He succeeded Mr. J. W. McLusky in the post of General Manager. Mr. Burns has had a long association with amateur athletics. He is a Past-President of the West of Scotland Harriers and in 1938-39 was President of the Scottish Amateur Athletic Association. In 1945 he became Captain of Milngavie Golf Club.

Mr. **George E. Currier** (North Eastern Area Gas Board) has been Engineer and Manager of the Bradford Corporation Gas Department since 1934. He is a native of Birmingham, where he received his early training, and was for four years Chief Assistant at the Smethwick Corporation Gas Department, being closely associated with a £200,000 reconstruction scheme there. He was afterwards appointed Works Manager at the Meadow Lane Works of the City of Leeds Gas Department, and went to Bradford as Deputy Engineer and Manager in 1932, being promoted to the senior position two and a half years later in succession to Mr. E. Crowther, this year's President of the Institution of Gas Engineers and recently appointed Chairman of the Northern Area Gas Board. During the war Mr. Currier was North-East Regional Gas Engineering Adviser, and he is a Past President of the Manchester District Association of Gas Engineers.

Mr. **George A. Matthews** (West Midlands Gas Board) is at present Birmingham and Midland Secretary of the National Union of General and Municipal Workers. A native of Burton-on-Trent, Mr. Matthews entered the gas industry on leaving school and subsequently served an apprenticeship in engineering with the Midland Railway at Burton. After the first world war, in which he served with the Royal Engineers, he rejoined the gas industry, and in 1934 was elected an officer of the N.U.G.M.W. and moved to Birmingham. From 1936 to 1943 he was Joint Secretary of the Midland Regional Joint Industrial Council for the Gas Industry, and in 1943 he became its Chairman, a position he still holds. He is also a member of the National Joint Industrial Council. Mr. Matthews was appointed a J.P. in January, 1946. His home is at Quinton.

Mr. **R. S. Snelling,** J.P., F.C.I.S. (Wales Gas Board) is General Manager and Secretary of the Newport Gas Company, of which he is also a Director. Born at Newport in 1890, Mr. Snelling is the second son of the late Mr. Edward Snelling, coachbuilder, and Mrs. E. E. Snelling, who is still living at the age of 81 at Kensington Place, Newport. He was educated at Durham Road Schools and the Newport Technical College and in 1916 married Miss Elsie James, also of Newport, who died in 1936. Mr. Snelling started his career in the offices of Messrs. John Young and Son, Auctioneers, and, after a few months, went to Messrs. Cornby and Baker Jones, Solicitors, entering the service of the Newport Gas Company in 1907. He was appointed Assistant Secretary in 1931 and after the death of Mr. W. Stanford in 1938 succeeded him as Secretary. In 1939 he became General Manager and Secretary and in 1947, following the death of Major Julian Day, M.C., he was appointed to a seat on the Board of Directors. In 1943, Mr. Snelling became General Manager to the Severn Valley Gas Corporation, Ltd., and Gas Consolidation, Ltd., but retained his official connexion with the Newport Gas Company. He was appointed a Justice of the Peace in 1942. He is a Fellow of the Chartered Institute of Secretaries and has for many years been a member of the Wales and Monmouthshire Council. He is also a prominent member of the Wales and Monmouthshire Association of Gas Engineers and Managers and takes an active part in the social and commercial life of Newport.

Mr. **J. H. Dyde,** M.Sc. (Eastern Gas Board) was educated at Scarborough and at Leeds University, where he graduated in the Department of Pure Chemistry and later in the Department of Gas Engineering. In 1928 he was appointed Technical Assistant to the Plymouth and Stonehouse Gas Light and Coke Company. He was awarded the M.Sc. degree by Research Thesis in 1929 and gained a Diploma in Gas Engineering of the Institution of Gas Engineers, First Class, with distinction, in 1932, and with it the Charles Hunt Memorial Medal. After five years as Sales and Technical Superintendent at Plymouth, he was appointed Engineer and General Manager of the North Middlesex Gas Company in 1937. From there he went to Slough in 1944 and shortly afterwards he took over the additional responsibilities of Engineer and General Manager of the Uxbridge, Maidenhead, Wycombe, and District Gas Company. Last year he was appointed Director of No. 1 Group of gas undertakings administered by the South-Eastern Gas Corporation, and thus became a Director of the two companies of which he was Engineer and General Manager, as well as of the North Middlesex Gas Company and a number of others in the Group. He is a Past-Chairman of the Eastern District of the Southern Association of Gas Engineers and Managers, and a Vice-President of the parent Association.

Mr. **F. M. Birks,** C.B.E., M.I.C.E. (North Thames Area Gas Board), is Deputy Governor and Managing Director of the Gas Light and Coke Company, and Junior Vice-President of the Institution of Gas Engineers. He began his career as a pupil of Fielding and Platt, Engineers, Gloucester. Having completed his training he joined the staff of the firm and was engaged for a time on factory and engine erection in the Argentine. On returning to Britain he joined the Swansea Harbour Board as Mechanical Assistant to the Chief Engineer, and was engaged for some time on the erection of the Kings Dock, completed in 1909. He then worked for a year in Brazil on the construction of the Para Harbour, returning in 1911 to the Swansea Harbour Board as Chief Assistant Engineer (Civil and Mechanical). In the first world war he spent four years in France on Mechanical Transport duties, and in 1921 he left Swansea to become Mechanical Engineer at the Gas Light and Coke Company's Beckton Works, where he remained until 1929, when he went to Westminster as the Company's Mechanical Engineer. He was appointed Chief Engineer in succession to the late Mr. R. W. Hunter in 1941, was decorated with the C.B.E. in 1945 and later the same year was appointed a Managing Director of the Company.

Mr. **S. E. Whitehead,** J.P., B.Sc.(Eng.), A.M.I.Mech.E. (Southern Gas Board), succeeded Mr. F. Durkin as Engineer of the Southampton Gaslight and Coke Company in January, 1930, becoming General Manager in 1932 and Managing Director in February, 1944. He went to Southampton from the Portsmouth Gas Company, where he was Assistant Engineer for 11 years. Mr. Whitehead received his training in the Birmingham Gas Department, afterwards spending two years as Draughtsman, Chemist, and Assistant at Southport, and four years in the Gas Section of the Department of Explosives Supply. He was President of the Southern Association of Gas Engineers and Managers in 1937, and of the Institution of Gas Engineers in 1945. He became a J.P. in 1939.

A Series of Cookery Demonstrations sponsored jointly by the Bognor and District Gas and Electricity Company and Alfred Bird & Sons, Ltd., attracted large audiences at Bognor last month. Invitations were sent to all the local women's organizations and, through the West Sussex County Council, to senior schoolgirls and their teachers, and there were afternoon and evening sessions each day. The demonstrations were given with the help of a New World 1430 gas cooker. Numbered tickets were distributed and the holder of a lucky number was rewarded with one of the dishes cooked.

COKE FOR THE OPEN FIRE

At the Autumn Research Meeting of the Institution of Gas Engineers, on Nov. 24, Mr. T. F. E. Rhead and Mr. E. T. Pickering, of the Birmingham Gas Department, presented a paper on "Coke for Use in Open Fires from Continuous Vertical Retorts." This contribution gave an account of investigations carried out in Birmingham during the past 15 years. The main findings of this important piece of work were summarized in last week's "Journal," p. 490. We give here some of the highlights of the discussion which followed presentation of the paper (I.G.E. Publication No. 343).

OPENING the discussion, Dr. A. Parker (Director of the Fuel Research Board) said that it was well known that in certain areas consumers could buy coke properly sized and suitable for special open fire coke grates, but there were many areas where they are unable to buy satisfactory coke. The Simon Report drew attention to the need in this country for much greater efficiency in domestic heating services in individual houses. It also drew attention to the need for greatly reducing atmospheric pollution which, after all, meant more soap, more labour for cleaning buildings, repainting, laundry work, and everything else, quite apart from considerations of health. How, asked Dr. Parker, were these supplies of smokeless fuel to be met? It was clear they would not be met entirely by an increase in the supplies of anthracite and low volatile steam coal available to the domestic market. In his view they had to be met largely by supplies of coke. They could not be met by gas. If gas and electricity were to handle the main winter load for heating, he hesitated to imagine what the capital charges on the plant would be. The main winter load must be taken by solid fuel.

Coke for New Appliances

"The work described in this paper," continued Dr. Parker, "is the right direction. It deals with the open fire. I suggest that the next move, looking further ahead, is to consider cokes suitable for the newer appliances, the closed and the openable stoves which are certain to be very much more efficient than any type of open fire. This will give greater latitude in the production of coke of the right type, because these closed and openable stoves will not be quite so particular in regard to ease of ignition." They had thought about this at the Fuel Research Station and, in fact, they had already started work. They had carried out preliminary tests with the carbonization of Yorkshire coal with a swelling number between 8½ and 9, and therefore not an easy one, in intermittent vertical chambers under different conditions. Each chamber had a capacity of 2¼ tons, and the normal practice was to carbonize for 12 hours at certain temperatures. They had started with this Yorkshire coal and had carried out normal carbonizing, finishing up with 5%, by weight, of steam on the weight of coal at the end of the carbonizing period. They had also carbonized the same coal for shorter periods of 11, 10, 9, and 8 hours and with slightly reduced temperatures in the combustion chambers. They had taken cokes from these carbonization experiments sized 2 in. to 1 in., testing them in a recognized open coke grate of well-known design and in an ordinary stool bottom grate. The procedure meant a 20% reduction in the therms per ton of coal, but an increase in therms per retort up to 19%. The calorific value of the gas increased from 540 to 656 B.Th.U.

Dr. Parker concluded: "We have not had such easy ignition as that indicated in the tests in the paper, but we believe that our cokes are more suitable for the newer appliances; and we have, in fact, succeeded in burning them, of this range of size, quite satisfactorily in the grate designed for coke, and the coke obtained with the minimum period of carbonizing has been burned quite satisfactorily even in the steel bottom grate. . . . If the coke can be improved, then a wider range of size is possible I can visualize 4 in. to ½ in. being used in these new stoves, and this will greatly increase the proportion of the coke which can be sold at the higher price on the domestic market. Surely that fits in with the whole economics and is one way of keeping down the price of gas. The recommendations in the Simon Report are generally accepted. There are many new appliances now being made and we shall have them soon not only for replacement in old houses but for installation in the new ones. These appliances will want fuel, and here is a chance of making it."

Creating a Demand

"Commercial success results from producing a product of such a quality that a demand is created," remarked Mr. H. H. Thomas (Liverpool Gas Company), who went on: "Considerably increased interest must be taken in the quality of coke. We are all aware of the average domestic consumer's view of coke as a fuel, and it is our responsibility to modify this view in the interest of the consumer, the nation, and the industry. A very good start is provided by the Report of the London and Counties Coke Association on Coke Quality, and the present paper enables the proposals of that report to be carried a stage further."

Mr. Thomas then referred to the Simon Report, in which there was the statement that "there is no solution to the smoke problem of our cities till the old-fashioned open coal grate is abolished . . . endeavour should be directed to ensure that available supplies of smokeless solid fuels are burned in individual houses, that the main winter space and water heating load is taken by solid fuel, that the production of graded smokeless fuel of improved and uniform quality for domestic purposes is encouraged, and that research is directed towards the development of economical methods of producing coke and smokeless briquettes which are easily lit and kept burning at low rates of combustion."

The speaker then put forward the suggestion that the use of the thermal yield as a measure of carbonizing efficiency might well be abandoned in the interest of coke quality. The assessment should be made upon a combination of thermal yield and output with coke quality. Where increased output was attained both capital and labour charges were reduced, and in certain circumstances the rather less severe carbonizing conditions used would probably lead to an increase in the life of the setting and lower repair costs. The authors currently visualized improving coke quality still further by increasing the reactivity to a C.A.B. of 0.035-0.038. In his opinion that was the procedure by which a satisfactory open grate fuel would be produced. The authors had also spoken of a coke which, by its greater flexibility gave the consumer greater satisfaction. Such a fuel, remarked Mr. Thomas, was produced in Liverpool in considerable quantity before the war and the demand was increasing; difficulties due to fuel rationing and to availability of coal of suitable quality had reduced the quantity sold, but there was no doubt of the success of such a fuel. In their experience it was not necessary to go below a C.A.B. of 0.038.

Mr. T. C. Finlayson (Woodall-Duckham Company) remarked that the paper appeared to lead to the view that any step which resulted in a reduction in the bulk density of coke tended to give a fuel more easily combustible in the open fire. Thus, using a given coal carbonized under similar conditions, the coke from nut coal was shown to have a lower bulk density and was more combustible than coke made from screened coal. Again, with a given coal the coke from a more heavily steamed charge was shown to have a lower bulk density and was more reactive than the coke from a less heavily steamed charge. Yet again, the bulk density of coke from low rank coals was substantially lower than that from high rank coals and the resulting coke was substantially more reactive from the former than from the latter. To what extent could bulk density be taken as a rough and ready indication of the probable combustible properties of coke for use in the open fire?

Explosive Bats

Mr. F. Firth (Leeds Gas Department) recalled how in 1933 he had pointed out that probably the greatest objection to using coke in the open grate was the explosive nature of the combustion, and until it was eliminated the prospects for pushing coke for use in the open grate would always be under a big handicap compared with other solid fuels. At that time in Leeds they carried out experiments to find the reason for noisy combustion, and, to sum up, they discovered that the whole trouble was due to "shock" quenching of the incandescent coke, causing stresses and strains in the structure, which exploded when heated. Emission from an open coke fire was not confined solely to "bats" but included coke particles. They found that they could load a coal with "bats" and after carbonization, if instead of water-quenching they air-cooled the incandescent mass, the resultant mixture of coke and "bats" was silent-burning; in brief, when they annealed by slow cooling they obtained a silent-burning fuel.

A Question of Balance

Experience over 20 years at Tottenham led Mr. P. C. Gardiner to confirm the principle underlying the whole of the work reported in the paper. Generally speaking, he said, the coals from Derbyshire produced a satisfactorily reactive coke when carbonized in continuous vertical retorts. Engineers who normally carbonized Durham coals often failed to realize benefits inherent in coke from low ranking coals such as those from Derbyshire. The most important attribute of coke for use in open grates, continued Mr. Gardiner, was the brightness of the fire produced, and satisfactory results could be achieved only by the use of reactive cokes. Some of the cokes made at Birmingham gave a bright fire 30 minutes after lighting: and such fuel could not fail to be of tremendous value in implementing the recommendations in the Simon Report, which called for an ever-increasing quantity of solid smokeless fuel for domestic use. The difficulty inherent in its production was one of economics. The coal from which the more reactive coke was obtained often gave a poor gas yield. It was therefore necessary to weigh the advantage of the

better coke against the lower gas make per ton. The introduction of differential prices for high and low reactivity coke was justifiable and would go a long way towards solving the economic problem, at any rate in some areas of the country. Mr. Finlayson, concluded Mr. Gardiner, had asked if bulk density was an indication of the usefulness of coke in open grates. In his opinion it definitely was. It was the one characteristic which could be relied upon to give the best indications.

ELECTRICAL DETARRING

By MAURICE POTTEVIN and ADRIEN LEDUC,
Engineers of the Compagnie des Compteurs, Paris.

The following paper was read before the Association Technique de l'Industrie du Gaz en France, at the Congress, 1948. The paper has been translated by the Chemical Engineering and Wilton's Patent Furnace Company, Ltd., who in conjunction with Measurement, Ltd., of the Parkinson & Cowan organization, hold the licence to manufacture and supply the detarrers in Great Britain and the Commonwealth.

ELECTRIC precipitation consists of utilizing the ions given out by electric conductors, raised to a high potential, to charge the solid or liquid particles contained in the gas which are thereafter precipitated by electric attraction on to the collectors at earth potential. An apparatus for electric precipitation is, therefore, composed of two essential parts: the high tension electric generator and the precipitator.

The high tension generators at present known are of numerous types and different principles. They may be classified in two categories—rotary generators and electrostatic generators. Rotary rectifiers are inherently difficult because they supply a tension which is not constant—at least in single phase. This results in a considerable lowering of the efficiency of the precipitator. They also emit radio-electric disturbances. We have discarded dynamos because they are costly and awkward in operation at the required voltages of 30-40 kV. In spite of the progress which has been made recently and the advance in French technique concerning electrostatic machines operating under high pressures, these are not yet adapted to the power and particular impedance of industrial precipitators.

Among the static rectifiers which we have eliminated are electronic and ionic valves, because the first are subject to too much wear and tear, and the second do not rectify at sufficiently high tension. Also, we have discarded rectifiers of the copper-oxide type, which are cumbersome. We have adopted rectifiers of the selenium type, which we find have great advantages.

Selenium rectifiers offer all the advantages which are called for in an industrial rectifier—reduced space, no maintenance cost, stability in operation, and high efficiency. It has been said that such rectifiers deteriorate and lose their qualities after prolonged use. This deterioration is not important. We cause this deterioration artificially before each installation is put into service, so that its operation may be perfectly stable.

The choice of the precipitator has proved simple. There are only two categories: those which comprise electrodes with parallel faces, between which are placed the ionizator wires, and those which are composed of a nest of parallel tubes each having its individual ionizator wire.

The precipitators of the first category have the drawback that they present, between each ionizator wire, spaces in which the electric field is negligible where precipitation is very much reduced. This has the result of lowering the efficiency of the apparatus.

We have therefore adopted the second type and have constructed our apparatus of two essential parts—a static selenium rectifier and a precipitator constructed of a nest of parallel tubes.

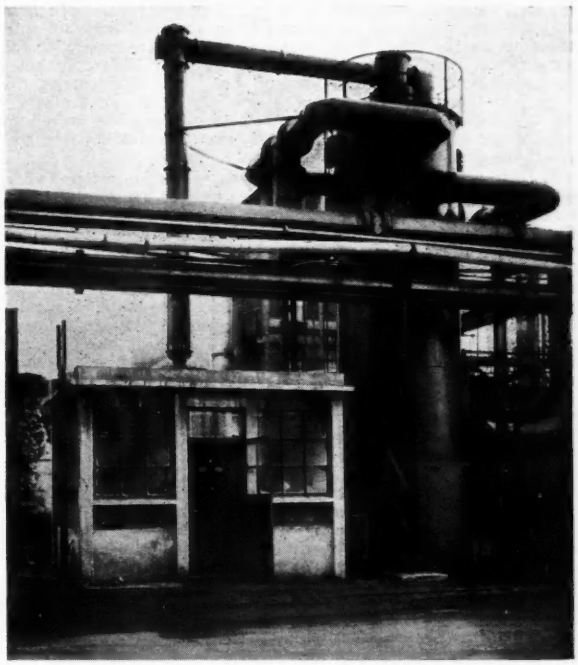
Advantages Enumerated

The new apparatus which we have perfected has the following advantage:—

Protection of the Insulator.—An atmosphere of wet corrosive and tarry gas is particularly unfavourable to the maintenance of an electric insulator at high tension, and several precautions should be taken to protect it:—

(a) *Against the Condensation of Water.*—To avoid condensation it is sufficient that the insulator should be at a higher temperature than that of the gas. In normal practice the chamber in which the insulator is placed is heated by a steam coil. This process presents little flexibility and requires either a static regulation depending upon the temperature of the gas or a non-static temperature regulator. It is more reasonable to establish a constant difference of temperature between the gas and the insulator. We have brought about this last requirement easily and automatically by placing in the interior of the insulator an electric resistance supplied with the appropriate current. This controlled current raises the temperature of the insulator to a constant number of degrees higher than the temperature of the gas surrounding it. This difference in temperature is governed by the heating current, which is supplied by a suitable insulated transformer.

(b) *Against Deposits of Tar.*—Although the gas leaving the apparatus is detarred it still contains some traces of tar which could dirty the insulator after several months' work. We protect the latter by an ionizator screen placed at the entrance of the cylinder in which the insulator is situated. This screen, in the form of a thin plate, has a diameter such that it gives out an ionization current towards the cylindrical body. The fine traces



Electrical detarrer installation at the Houilleres du Bassin du Nord et du Pas-de-Calais.

of tar which the gas might still contain are obliged to cross this barrage if they are to enter the chamber of the insulator. They are then charged with ions emitted by the screen and precipitated towards the outer wall. This barrage is only efficient when the gas is still. If it is turbulent the tar particles have less opportunity to be charged. It is therefore necessary to place, between the apparatus and the insulator chamber, a baffle to prevent any turbulence of the gas. This baffle consists of a long and narrow tube. It is, moreover, useful if for some reason or other one should stop the high tension generator without stopping the flow of gas through the detarrer. The gas passing through the apparatus is then no longer detarred; its speed in the insulator chamber is so slight that the tar deposits are greatly reduced, provided that the abnormal operation is not prolonged too much.

(c) *Against Mechanical Stresses*—During erection or the inspection of the interior of the apparatus it is inevitable that some strain will be exerted on the grid and on the parts suspended from the insulator which would be dangerous if the suspension was not studied specially. We have dealt with this by a triangular system of suspension which is free and easily oscillates if one puts a greater strain on one side of the supporting grid than on the other, but which returns to a centred and stabilized position when the strain is removed.

(d) *Against any Operation Trouble.*—If a fault appears in the protection devices we have just described, or in the operation of the apparatus—for example, long running of the gas in the precipitator without high tension—the conductivity of the surface of this insulator may become too high. Then, a very small current passes at first on this surface; and, later, a stronger current, which

may be dangerous. A protection against this danger is based on the detection of the smallest leakage of current on this insulator, by means of a relay connected with the *insulated* mounting ring of this insulator. It is thus possible to detect the beginning of the leakage of current and avoid its becoming dangerous.

(2) *Ionization Limitors.*—In accordance with the normal process of electrostatic precipitation the particles of tar are charged in the lower part of the collecting tubes and after that precipitated. In order that a particle of tar may be caught, it is therefore necessary that it should be charged far enough from the extremity of the outlet of the collecting tube, so that it may have time to reach the sides of the tubes.

The electric charges given out by the ionizator wire are therefore only useful when this emission is made at a certain distance from the extremity of the outlet tube; beyond this limit the tar particles which are not yet charged do not have time to be precipitated. It is necessary, in order to use the least amount of electric power supplied by the generator, to limit the ionization to the first part of the passage through the tubes and to increase the electric field in the second part in order to accelerate precipitation of particles which were charged in the first one. We obtained simultaneously these two advantages simply by the fact that the ionization limitors are composed of a metallic tube of a few centimetres in diameter, which on the one hand does not emit ions, and on the other hand increases the mean intensity of the electric field which surrounds it. This metallic tube constitutes the upper part of the high tension conductor and carries the lower part consisting of a fine wire which emits the ionization current. The use of ionization limitors enables us either to reduce by 20% the power of the generator, or to increase the throughput of the gas in the same proportion.

(3) *Uniformity in the Speed of Gas Inside the Collecting Tubes.*—This uniformity has a big influence on the capacity for detarring, because for the same ionizing current the outlet content of tar increases infinitely more quickly than the speed of the gas. For a given electric power and a given output of detarring, the throughput of gas treated is maximum when the speed is the same in all the tubes. When this speed is variable in one tube to another, the throughput of gas has to be reduced to a ratio almost equal to that of the extreme speeds. Now the ratio of these speeds can easily reach a value of 2 or 3, if one does not take special precautions, especially in the larger plants with a great number of tubes. To avoid this inconvenience we have placed the nest of tubes in a double container. The gas is divided into two streams and enters the annular space between the two containers. To obtain uniform speeds the internal container is much longer than the nest of tubes.

(4) *Protection Against Corrosion.*—When the gas is detarred before its chemical purification, some parts of the apparatus become exposed to the corrosive agents which the gas contains. One can no longer bank on the natural protection afforded by a tar coating, and this factor is all the more real when the detarring is at its best. The problem of corrosion is the most difficult one to solve because the conditions are very variable; the nature of the gas, the nature of the surfaces, temperature, &c. Moreover, the effects of corrosion do not show themselves for a long time. Besides the observations we have made of some already known factors—particularly that corrosion is considerably increased by products of condensation and that initial state of the surfaces is very important for their behaviour—we have also come across some factors which are less well-known. For speeds of several metres per second similar to those used in detarrers, corrosion was inversely proportional to speed; and this took place in two totally different cases. The point is that the problem only concerns detarred gas and parts of the apparatus in contact with crude gas; the mains themselves require no special protection.

With reference to the corrodible parts the most readily affected are those which are the thinnest. Ionizator wires and discs, parts which are made in stainless steel, afford a satisfactory solution, the price of which is not prohibitive since these are comparatively small. All the other parts of the apparatus in contact with detarred gas are protected with bituminous paint. They are all accessible and it is easy to inspect them or to add a further coat periodically if necessary.

(5) *Protection Against Electro-chemical Corrosion.*—We have only considered in the foregoing purely chemical corrosion—that is to say, corrosion resulting from the direct action of corrosive elements of the gas on various parts of the apparatus. We must also consider corrosion which can proceed from electro-chemical action by contact between different metals. It could, for example, arise between parts in stainless steel and ordinary steel. We have, above all, directed our attention to the hanging parts of the ionizator wires. To avoid contact between these wires and the parts in ordinary mild steel, the wires are suspended from stainless steel hanging parts. The discontinuity between this alloy and ordinary steel is thus carried back to massive pieces in which it is easy to ensure large size screwing, completely tightened and sheltered from corrosive products.

(6) *Protection Against Overload.*—This can result from flashing between the parts under high tension and the body of the apparatus. If this takes place in the mass of gas—for example, between the wires and the collectors—it is without danger and is generally caused by falling drops of tar. The apparatus is protected against these discharges by the use of an impedance placed in the discharge circuit and regulated in such a manner as to allow the automatic quenching of the flash, without stopping the apparatus. If this flashing occurs as a result of a short circuit, which could also be produced outside the precipitator, the overload is of longer duration and more dangerous. The working of a safety relay comes into operation and stops the apparatus, also giving warning by means of a light or claxon signal.

(7) *Protection against Deposits of Naphthalene.*—When treating gas saturated with naphthalene, voluminous condensations of this material can be produced, causing permanent flashing. It is then necessary to stop the apparatus to clean it. But the best protector against this inconvenience is to avoid the saturation of the gas with naphthalene. It is possible to prevent it by correct determination of primary condensation. But it is important to realize that for a given condensed gas the risk of condensation of naphthalene is smaller after the exhauster than before, because of the more favourable equilibrium gas-tar-naphthalene.

(8) *Position of the Detarrer in the Gas Stream.*—If one only considers the functioning of the detarrer, many things favour placing it after the exhausters:—

(a) Reheating the gas after the compressor avoids its being saturated.

(b) Operating under pressure enables the size of the precipitator to be reduced.

(c) Faults due to leakages will not cause any risk of explosion.

(d) Control of efficiency is easy without auxiliary exhauster.

But this point of view concerns the detarrer only, without consideration of the behaviour of any other apparatus placed in the gas circuit. Generally speaking, the position of the detarrer will be determined after complete examination of the problem in accordance with the following rules:—

Generally, detarring is carried out in one step, the detarrer being before or after the exhausters, according to the type of the latter.

Detarring in two steps, hot and cold, ensures dry tar, clean ammonia liquor, separation of tar from light oils, and free running of the tar. But this would make the scheme more expensive, and we would therefore only recommend this solution when the above-mentioned advantages are of paramount importance.

The improvements that we have described give new qualities to electric detarring plant. The devices used are for the most part electrical and their perfection results from efforts which we have made to associate electrical and gas techniques.

NEW B.S. SPECIFICATIONS

The British Standards Institution has issued a revised edition of British Standard 522: 1938, "Orthocresol, metacresol, and paracresol." The revision was undertaken at the request of the Standardization of Tar Products Tests Committee, and the principal alteration as compared with the last edition published in 1938 is that two grades of material are classified according to crystallizing point. The specification covers solubility in caustic soda, specific gravity, boiling point, crystallizing point, and includes limits for residue on evaporation. Sampling and test methods are described. Copies of the specification may be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W.1, price 2s., post free.

The Institution has also issued a revised edition of British Standard 523: 1938, "Phenol." Again the revision was undertaken at the request of the Standardization of Tar Products Tests Committee, and the principal alteration as compared with the last edition published in 1938 is that a method for the determination of water has been added to the appendices and the analytical methods have been generally revised. The specification covers solubility in water, crystallizing point, and boiling point, and includes limits for residue on evaporation and water. Sampling and test methods are described. Copies are price 2s. each, post free.

A further new specification is No. 524: 1938, "Refined cresylic acid." In this, the principal alteration as compared with the last edition published in 1938 is a clause relating to residue on distillation which has been added. The method of test has also been defined. The specification provides for six grades of materials: 99.8, 99, 98, 97, and 95%, and covers specific gravity, colour, and distillation range. Limits are specified for residue on distillation, water, pyridine bases, and neutral oils, acids and alkalis, and hydrogen sulphide. Sampling and test methods are described. Copies are price 2s. 6d. each, post free.

Cannock and District Gas Company's sales having increased from 119 mill. cu.ft. in 1938 to 318 mill. cu.ft. last year, the Ministry of Fuel and Power has made an Order to enable the Company to arrange temporary capital facilities to cover general development of plant and mains.

PONTARDAWE—NEATH BULK GAS SUPPLY

AN important addition to the industrial potential of the Swansea Valley was made on Nov. 30 when Mr. R. Kelf-Cohen, Under-Secretary, Ministry of Fuel and power, formally opened a control room and valve at the Tawe Valley Gas Company's Works, Pontardawe. This allowed the Neath-Pontardawe bulk gas supply to flow, and marked the completion of one link in the chain of supply recommended by the West Wales Working Party.

The ceremony was performed in the presence of industrial chiefs, directors and managers of various gas companies in South Wales, and representatives of local authorities. Attending the function was Mr. T. Mervyn Jones, Town Clerk of Newport, recently appointed Chairman of the Wales Area Gas Board.

Mr. **W. Clark Jackson,** Chairman of the Tawe Valley Gas Company, in asking Mr. Kelf-Cohen to open the control valve remarked that the West Wales Working Party consisted of Mr. Edwards, Port Talbot; Mr. Ablett, Swansea; Mr. Pickard, Llanelly; Mr. Edwards, Bridgend; and himself. The scheme would form an integral part of the eventual grid and had been designed to provide for all the future gas requirements of the Swansea Valley. Mr. Jackson paid tribute to the Ministry of Fuel and Power and its officials for all the co-operation and assistance rendered to the company since the venture was first decided upon, to the members of the Working Party and its Convener, for their help, to the Contractors—Messrs. Whittaker Ellis, Ltd., for the excellent engineering manner in which the work of laying the main was carried out, and lastly to their Engineer and Manager, Mr. J. A. Elphinstone, who by his skill and resourcefulness had overcome the many difficulties encountered.

Following the opening ceremony, the company were entertained at luncheon at the Ivy Bush Hotel.

Proposing "The Trade and Prosperity of the Swansea Valley," Mr. **W. Clark Jackson,** Chairman of the Tawe Valley Gas Company, who presided, referred to the importance of the Swansea Valley to the economic life of South Wales and to the difficult years between the two wars, when the Valley suffered severe depression. In the past the Valley had depended upon the two staple industries of coal and steel. Its anthracite coal was famous all the world over, and under the able direction of the Gilbertson family, who had done much for Pontardawe, the same could be said of the steel and steel sheets produced in the town. With the coming of the nickel industry to Clydach, the Valley enjoyed real prosperity in the years prior to the first world war. During the inter-war years they had suffered a lean time. From time to time hopes were raised of a betterment of the position, only to be dashed to the ground. The Pontardawe and Ystradgynlais Councils had given serious consideration to the problems.

Councillor **John Davies,** J.P., Chairman of Pontardawe Rural District Council, responded.

National Fuel Policy

Proposing the "Gas Industry," Alderman **J. E. Emanuel,** Neath, said that history was being made that day in that part of the Principality in providing another stage in the national fuel policy. What they had done would be of inestimable value to the Swansea Valley. If the country was to be restored to the peak of efficiency to which it was entitled, the gas industry would have a very important part to play in the national economy.

Responding, Mr. **H. Blythe,** President of the Wales and Monmouthshire Association of Gas Engineers and Managers, observed that the gas industry was the only nationalized industry to have a separate Welsh Region, and this outcome had been due to a large extent to the efforts of the Association.

"Our Guests" was proposed by Mr. **G. E. Hider,** a Director of the Tawe Valley Gas Company, who referred to the co-operation they had received from Mr. Kelf-Cohen and Dr. F. H. Moore. No private organization could have given a speedier decision in connexion with the scheme which they had seen completed that day.

Mr. **R. Kelf-Cohen,** in reply, said that his Department had realized that the problems of Wales could only be solved in Wales, and had thus decided to give Wales a separate region. He paid tribute to the co-operation which his department had received from administrators and technicians of the gas industry in Wales. Fundamentally, he added, the industry was undergoing a great technical change. It had evolved from a collection of small gasworks set up in each town or village for the purpose of supplying light to householders to an industry which was supplying heat and by-products for all kinds of industries. At the present time they had factories calling out for a supply which in the past would have been sufficient to meet the needs of a town.

In a brief address, Mr. **T. Mervyn Jones,** Chairman-designate of the Wales Area Gas Board, said he was honoured to be able to play a small part in the gas industry in Wales, which would be one of the foundations of economic prosperity and social well-being of the people. He spoke only under some pressure from the Chairman. His wish to remain silent was genuine because his work in the gas industry had hardly begun whereas the present function marked a great achievement of the past régime and all the credit and honour should go to those who had borne the brunt and the heat of the day.

In conclusion, Mr. **Clark Jackson** moved an omnibus vote of thanks to all who had contributed to the success of the function, and, in particular, to Mr. J. A. Elphinstone, Manager of the Tawe Valley Gas Company, who, apart from being an efficient gas technician, had proved to be an efficient organizer.

Among those present were Messrs. E. M. Edwards (Port Talbot); Major Ivor David (Neath); W. J. Edwards (Bridgend); E. Ablett, O.B.E. (Swansea); A. Pickard (Llanelly); A. Anderson, J. A. Elphinstone, G. Fitton, R. Griffiths (Neath); and W. D. Thomas (Maesteg).

The Scheme in Brief

The gas is supplied by direct mains from Neath Gas-Works to Pontardawe Gas-Works comprised of two sections—permanent and temporary. The temporary main is laid in 4 in. Stanton screw gland spun-iron pipes from the booster in Neath Gas-Works for a length of 1,068 yards to Neath River Bridge. Here the main is laid in 6 in. steel tubing with butt-welded joints, and runs secured to the under side of the main Railway Bridge and alongside Railway embankments, for a length of 104 yards; the change in diameter from 4 in. to 6 in. is to provide for Neath a district boosting main for future use. The permanent main is then laid from this point to Pontardawe Gas-Works in 10 in. Stanton screwed gland spun-iron pipes, for a length of 8,166 yards. The route is by main road, footpaths, and open fields. The testing was done in sections of 200 to 300 yards at a pressure of 50 lb. per sq. in., and on completion 50 lb. per sq. in air pressure held for 48 hours. Only one pipe throughout the entire length was found faulty under test and changed. All welding was done on the site, together with the fabricating of all steel bends and specials. The ultimate offtake from this main by the Tawe Valley Gas Company is designed to be 30,000 cu.ft. per hour and a Holmes B.M. 75 meter has been installed at the gas-works.

Owing to the heavy demands made to provide gas to new factories being established in the Development Area of the Swansea Valley, the Tawe Valley Gas Company made a request to the Neath Corporation for assistance, and an agreement was entered into whereby Neath provides Pontardawe with a maximum of 200,000 cu.ft. per day, equivalent to the combined demand of the factories now in production. The demand is catered for by the use of electrically driven boosters delivering 10,000 cu.ft. per hour at 2 lb. sq. in. The temporary 4 in. and 6 in. mains absorb most of the overall pressure loss and a pressure of 12 in W.G. is maintained at the beginning of the 10 in. main which, of course, includes back pressure thrown by the Pontardawe holder. When the final grid connexion is made to the 10 in. main, the temporary 6 in. will be taken over by Neath as a boosted pressure main to augment the existing low pressure mains crossing the Road Bridge over the River Neath. The work of laying the main was carried out by Messrs. Whittaker Ellis, Ltd., and took 12 months to complete from starting date to the date gas was boosted to the holder at Pontardawe, including all permanent re-instatement of roads, &c. The total cost of the work to link up from Neath to the Tawe Valley Gas-Works was £32,197.

SHEFFIELD GAS CLASSES

The annual dinner and distribution of certificates to students attending the Sheffield Gasfitting and Gas Engineering Supply Classes was held on Nov. 26. The function was again organized by the 66 employees in the Distribution Department of the Sheffield and District Gas Company, who attend the classes as students.

The Gasfitting Course maintains a high level, and in the City and Guilds Examinations the following excellent results have been obtained. Final year, 91% of the students passed, including one distinction; Intermediate, 67% passed.

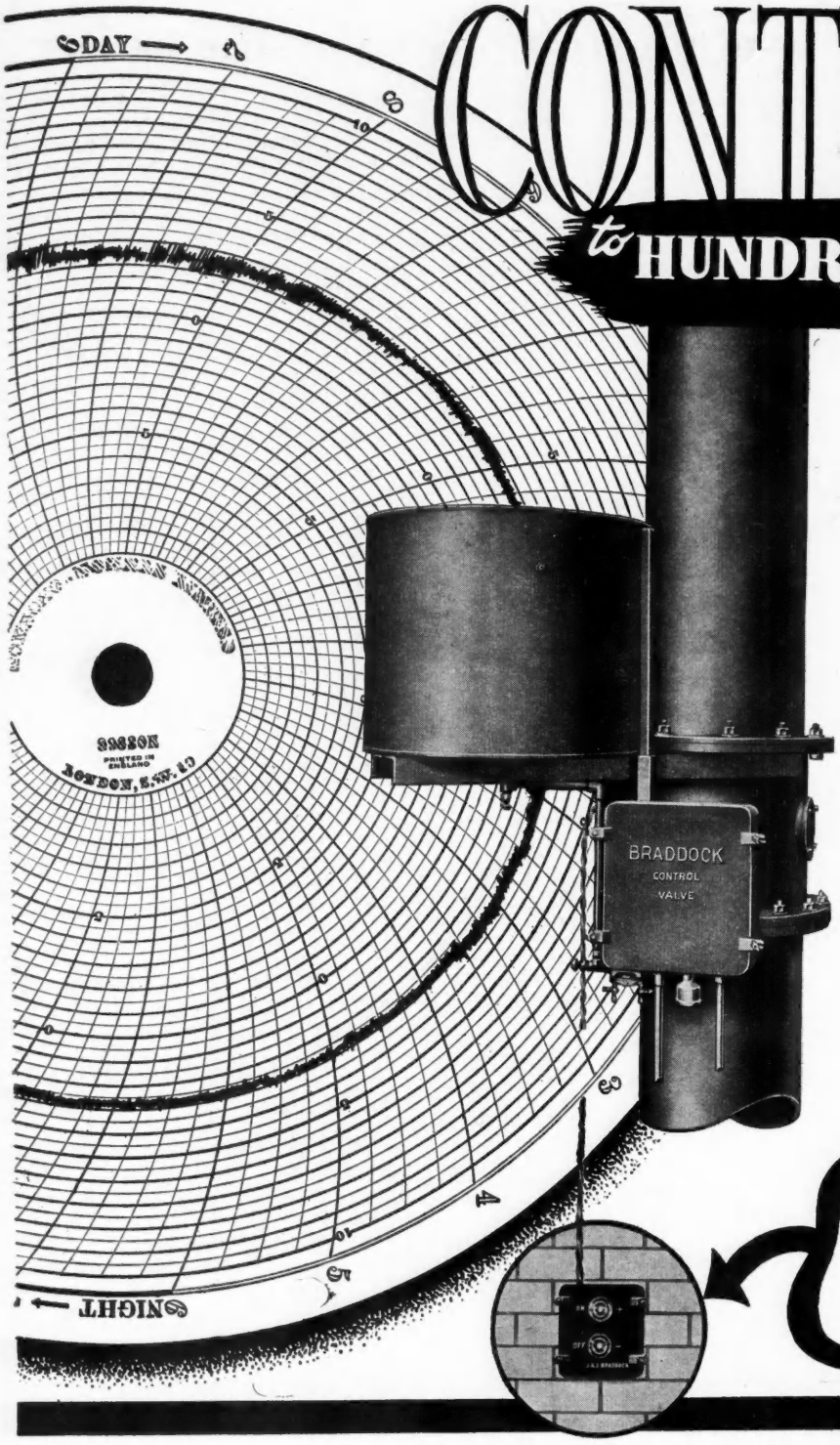
In the local examinations—instituted by the Sheffield Education Authorities—the following results were attained: Gasfitting: First year, 94 of the students passed; second year, 90% passed; final year, 89% passed.

Gas Engineering Supply.—First year: 81% of the students passed.

Fifty-five students out of the 66 attending the classes received their certificates at the hands of Mr. Ralph Halkett, General Manager and Engineer. The function was presided over by Mr. A. Wylie, Sales and Fittings Superintendent.

Mr. T. Hall, Principal of the Building Department, Sheffield Education Authority, gave a brief address.

CONTROL to HUNDREDTHS



MODERNISE your PLANT with a BRADDOCK RETORT-HOUSE CONTROL VALVE

We shall be pleased to send particulars and terms upon request.

PUSH-BUTTON CONTROL

J. & J. BRADDOCK

OLDHAM
GLOBE METER WORKS
Telephone: MAIN 3815

MORDEN ROAD,
MITCHAM, SURREY
Telephone: MITCHAM 2121

WOLVERHAMPTON
49, ABLOW STREET
Telephone: WOLVERHAMPTON 23198

NEW PLANT AT TREDEGAR

The importance of ensuring that the Consultative Councils, provided for in the Gas Act, shall be set up before the handing over of gas undertakings took place was stressed by Councillor John Stockton, of the Tredegar Urban District Council, at the opening of new plant costing £70,000 on Dec. 3. "These Consultative Councils provide the sole link between supplier and consumer," he claimed. "They were promised the electricity industry before nationalization and are provided for in the Act, but they have not yet been implemented. The gas industry must guard against a similar occurrence."

Councillor Stockton recalled a similar event at the Tredegar Gasworks 20 years ago when the first vertical retorts were opened. A new Gas Committee was introduced to abolish the old hand-fired horizontal retorts and introduce equipment worthy of the town. He was a young member of a distinguished sub-committee which included Mr. Sam Filer, O.B.E., father of S. Leonard Filer, the present Engineer, Manager, and Secretary, and also Mr. Aneurin Bevan, the present Minister of Health. "We underwent considerable criticism at the time for not switching completely to electricity," he added, "but we continued our modernization and our later policy of using electricity for lighting and gas for heating and cooking has been completely justified from the economic and other angles."

Councillor W. M. Clarke, Chairman of the Tredegar U.D.C. Gas and Water Committee, presses the switch to start the new coke screens.

Tredegar had another claim to gas industry fame, Councillor Stockton asserted. When they modernized their plant for the first time 20 years ago, they sent a sample of local coal for analysis, and constructed the plant to use this coal. As soon as the plant was completed the seam from which they proposed to get their coal supply closed down, and after hurried consultation they used a mixture of two other types of coal. It was completely successful—the first time to his knowledge that steam coal had been used for gas manufacture.

Councillor Stockton was speaking at a luncheon to celebrate the opening of new plant, and proposed the toast of the Contractors to a company which included the chief officials of a number of South Wales undertakings. Last minute official business had prevented Mr. T. Mervyn Jones, LL.B., Chairman of the Wales Area Gas Board, from being present, Mr. Ernest Ablett, Director, Engineer, Manager, and Secretary of the Swansea Gas Light Company, deputising for him in the toast list.

New equipment, officially opened earlier by Councillor W. M. Clarke, Chairman of the Gas Committee, included four new retorts and waste heat boiler by the Woodall-Duckham Co., Ltd., a new condenser and static washer by Clapham Bros., Ltd., a coke screening and grading plant by Aldridge & Ranken, Ltd., and a new station meter and exhauster. A new gasholder (130,000 cu.ft. capacity) which replaces an old holder is at present in course of construction by Firth Blakeley & Sons, Ltd. The total cost of the improvements is assessed at £70,000, which includes £24,000 spent on renewing mains in the district to cope with a greatly increased domestic load and provide for gas supplies to five new factories which will constitute Tredegar's first customers for industrial gas.

Speakers at the luncheon included Mr. John Farmer (Woodall-Duckham Co., Ltd.), Mr. R. W. Green, M.B.E. (Aldridge & Ranken, Ltd.), Mr. E. H. Clarry (Clapham Bros., Ltd.), Mr. W. Clark Jackson, M.Inst.Mech.E., M.Inst.Gas E. (Neath), Mr. J. Rust, M.Inst.Gas E. (Newport), and Major Ivor David.

Shildon (Durham) Urban Council has made further representations to the Bishop Auckland Gas Company about inadequate gas pressure. The Council has asked the Company whether it could now put into effect previous promises to provide a better supply especially at week-ends. The Council is also to approach the Ministry of Fuel and Power on the matter.

FIFTY-SEVEN YEARS' SERVICE

Mr. Henry Towsley Carr, an employee of the Maidstone Gas Company, retired on November 30 after 57 years' service in the gas industry. He started work with the Maidstone Gas Company as a fitter's apprentice on October 10, 1891. In July, 1899, he left to take up a position as a gas fitter and junior inspector with the North Middlesex Gas Company, and in January, 1903, he was appointed Junior District Superintendent with the South Shields Gas Company, eventually attaining the position of District Superintendent and Technical Assistant. The Company was eventually merged with the Newcastle-upon-Tyne and Gateshead Gas Company, and Mr. Carr continued to serve with them until he retired on pension on Mar. 21, 1942.

For personal reasons he then returned to Maidstone, and immediately offered to help the Maidstone Gas Company, which at the time was short of staff owing to the younger men being called up for the Services, and he has served for the last six and a half years as timekeeper and assistant wages clerk.

IN PARLIAMENT

In the House of Commons on Nov. 25, Sir Waldron Smithers raised the question of the cost of valuation and arbitration proceedings incidental to the transfer of the coal industry from private to public ownership. The Minister of Fuel and Power said the work of valuation was not sufficiently advanced for any estimate of the total cost to be more than conjectural, but the published estimates for 1948-49 included £2,500,000 for these costs and a similar amount would be required in 1949-50.

Sir Waldron Smithers thereupon asked Mr. Gaitskell why it was necessary to waste this public money to get inferior coal at a higher price, and how much more money was to be spent on these lines. To this Mr. Gaitskell replied that, if it was suggested that the method of compensation in the case of gas was superior to that adopted in the case of coal, he would not disagree.

Sir Frank Sanderson: Can the Minister give an indication when he anticipates that the valuation will be completed?—Mr. Gaitskell: Not for another two or three years.

Mr. Gaitskell was asked about the resources of methane gas in the British Isles. He referred to a reply to this point made in June, 1947, when the estimate was given that, if the whole population of the United Kingdom were served by sewage works, there would be available 28 mill. cu.ft. of methane a day, but after providing power at the works the surplus available would be small. He added that: No methane is at present available from oil-cracking works. The quantity of methane available from these sources is not at present sufficient for the production of carbon black or chemicals or as a booster for town gas. Some hydrocarbon gas (containing methane) should be available for town gas supplies from an oil-cracking plant in the near future.

A further question put to the Minister concerned fuel oil burning equipment. He explained that in a limited number of cases whose economic merits were exceptional conversion to oil could be completed. Under this arrangement schemes of conversion had been approved authorizing consumption of oil at an annual rate of 340,000 tons. Asked when it would be possible to install oil burning equipment without the necessity of obtaining permission, Mr. Gaitskell replied that the matter was under continuous review, but he could not tie himself down to a particular date.

The Minister was also questioned on the shortage of anthracite in the home market. He stated that the shortage arises from the need for increased exports, particularly to Canada. Gas coke, he emphasized, should be used whenever possible in substitution for anthracite. Manufacturers indicated that coke can be used in most stoves designed for burning anthracite.

In a Report to Hinckley Urban District Council on the nationalization of the gas industry, it is pointed out that because of the original intention that Nuneaton should be supplied with gas from Hinckley, the Hinckley undertaking had been allocated to the West Midlands Board. In view of the subsequent Ministerial decision that Coventry should supply gas to Nuneaton, Mr. A. B. Britton, Engineer, Manager, and Secretary, suggested the desirability of Hinckley being allocated to the East Midlands Board, and referred to the terms of the Council's observations to the Local Government Boundary Commission that the proposed new county borough should be sited within the county of Leicester. The Gas Committee reported that the Ministry of Fuel and Power had issued the necessary licence for a further increase of 0.6d. per therm in the price of gas as from the September reading.

SOLID FUEL IN THE HOME

"PACKAGES" FOR GAS, OIL, OR COAL HEATING

THAT it is likely that in the future manufacturers of domestic heating appliances burning different fuels will tend to co-operate more was suggested by Mrs. E. Fraser-Stephen, M.A., Organizing Secretary of the Women's Advisory Council on Solid Fuel, addressing a meeting of the Royal Society of Arts on Dec. 1. She expressed a belief that the prejudices against central heating are dying out and described a development in America which permits a cooker or domestic boiler to be converted from one fuel to another by the installation of heating "packages" for coal, oil, or gas. "What we may now look forward to," she declared, "is the development of every type, even the simplest and cheapest, in the direction already achieved by the best in this field, which are true scientific precision instruments for the art of good living."

Introducing Mrs. Fraser-Stephen, the Chairman, Dr. H. Roxbee Cox, Director of Research for the Ministry of Fuel and Power, said that the Women's Advisory Council on Solid Fuel had in the five years since its inauguration done a great deal of excellent work in educating the public and particularly women in the use of solid fuel in the home and in giving information about the latest solid fuel appliances. The interests of the Council and of the Ministry of Fuel were the same in wishing to ensure that solid fuel was burnt with the greatest efficiency.

Story of Slow Change

Sketching the history of the use of coal and of the domestic hearth, Mrs. Fraser-Stephen pointed out that this was a story of slow change from the earliest Norman fireplaces to the Victorian variety which was still with us. As far as cooking appliances were concerned, until the modern types appeared there had been no major innovation for nearly 100 years. "After the invention of the cast iron range in the early 19th century, the designers had no incentive to think of anything new. Coal was plentiful and so were willing hands to do the black-leading. The 19th century ranges are still with us, and many are in active use."

Though it might appear from this that coal was an "old-fashioned substance," and that there was no future for it in the home, there had within the last few years been a complete revolution in scientific opinion regarding the proper use of fuel in the home, and in the design of the appliances in which it should be burnt. As a result of the Egerton and Simon Reports, the last three years had seen something quite new in this country—a concerted effort by a large number of interests working together to end once for all the notorious inefficiency in the heating and hot water services in our homes. "This has meant an immense amount of effort and goodwill, and I do not know of any comparable work elsewhere."

Mrs. Fraser-Stephen warned against judging American standards of domestic heating comfort by the output of Hollywood. For example, in one industrial town in California, in the lowest income group only 5% had gas for cooking, only 15% had electric lighting, and only 12½% had baths or showers. There had been no effective united effort by federal and local authorities and commercial interests to cope with the kind of housing conditions which can be envisaged from these figures. By way of another example, she quoted the case of Holland, where there had been some testing of solid fuel appliances of the kind undertaken in Britain, but on a limited scale. Manufacturers sent their appliances to the Institut voor Warmte Economie at Delft, where they were briefly tested for output in relation to consumption.

"Full Health and Comfort"

There was also at Rotterdam a block of municipal flats in which different kinds of heating and hot-water systems were tested for efficiency and running costs while the tenants were in occupation. This was an interesting experiment but it did not compare with the efforts now being made in Britain, where there were nine official bodies concerned in one way or another with research into problems connected with the efficient heating of houses by solid fuel, in addition to eight organizations which discussed problems, carried out educational programmes, and published material on the subject from time to time. In addition to the three Ministries concerned—Health, Fuel and Power, and Works—the co-operation of a large number of local housing authorities had been secured, and the full and active support of the trade interests concerned, the manufacturers of solid fuel appliances, and the coal merchants. "Results cannot be expected overnight, but already we are beginning to make headway against the enemies of cold, dirt, and damp, and that for all members of the population, and not for a favoured few."

Mrs. Fraser-Stephen then reported on the progress made in the task of giving every one of this country's 12 or 14 million homes the "conditions of full health and comfort" demanded by the Simon Report. At the beginning of the three years under review, she said, the house building programme was ahead of the productive capacity of the solid fuel appliance makers, and cases arose where local authorities who wished to install modern appliances were unable to do so because the time lag in deliveries was so great. About the middle of this year production of modern appliances reached a point where it could be announced that enough would be available for all new houses, from 1948 on, and that there would also be a small surplus for replacement purposes. This surplus would become in time a substantial quantity available for the private householder. At present there were still a few appliances for which the ordinary person had to wait, production having been earmarked for local authorities.

But production was not the only snag in the way of developing the use of these new appliances, and we needed to make every effort to see that not only were local authorities fully aware of their duties in this respect but that other circumstances were coped with. For example, the lack of a piped water supply in a large number of villages—over 2,000—was holding up the installation of appliances which provided cooking or space heating with water heating, and which were particularly suitable for the homes of miners and agricultural workers. Mrs. Fraser-Stephen suggested that a subsidy for reconditioning the older type of rural and other dwellings would help a great deal in encouraging the replacement of obsolete solid fuel appliances by modern ones, a process now hindered by the landlord's inability to recover outlay by increasing rent, but a general reduction of building costs would probably be the best way of encouraging replacement.

Turning to the three main types of solid fuel appliance, Mrs. Fraser-Stephen said that it was generally agreed that the most efficient appliances were those designed to burn one specific fuel of a special size, as the capacity of the firebox could be exactly calculated in relation to the heat output required. The question of size of fuel came in when automatic stoking was considered. Automatic stoking was at present embodied in our more expensive appliances, and in time it should become as common as it was in Canada and America. As soon as proper grading of coal was established, she expected a great increase in the production of small domestic boilers for central heating needing attention only once in 24 hours. It seemed to her that the old prejudices against central heating were dying out.

More than One Fuel

The second type of appliance was that designed to burn more than one kind of solid fuel. In some cases this resulted in a loss of efficiency compared with the specialized type, but it allowed not only for the present difficulty over fuel supply, but made provision for local variations which were always bound to occur and for the personal preferences of the consumer.

Certain solid fuel stoves incorporated back boilers for water heating. These were not ideal because the time when hot water was needed and when the housewife was free to sit by the living room fire seldom coincided. She hoped that in time these back boiler arrangements would be converted to central heating systems by linking the boiler to radiators and by installing a separate hot water system. In the meantime some modern heating stoves were already warming more than one room by means of convected air.

Combined fuel appliances, using both solid fuel and either gas, electricity, or oil, were rare in this country though common enough abroad. In the United States there had been a great development of the cooker or domestic boiler which could be converted from one type of fuel to another. These boilers consisted of a basic unit with three different heating "packages" for coal, oil, or gas. The coal package consisted of grates, firebrick, and a shaker for hand-firing. The gas package provided an automatically controlled gas burner, and the oil package an automatic oil burner. The customer ordered whatever package he required and if he wished to change at a later date he could install a different package in about three hours. Full instructions were provided so that the change could be made by the householder without calling in a plumber.

The tendency abroad had been to cope with fuel uncertainties and variations of consumer taste by making solid fuel appliances more comprehensive and adaptable, whereas in this country so far each fuel had developed on its own lines, partly perhaps for competitive reasons. It might be that in future we might see more co-ordination between the fuels, not only on the broad basis which was the concern of the Ministry of Fuel's Scientific Advisory Committee, but between manufacturers of domestic appliances. For example, with the increased electrification of

rural areas we might one day have all solid fuel cookers fitted with a small electric motor to regulate the draught.

Mrs. Fraser-Stephen rounded off her address with a commentary on a film strip "The Story of the Fire," prepared by the Women's Advisory Council on Solid Fuel. This was followed by a discussion, in which Mr. J. S. Williams (Coal Utilization Joint Council) said that the present cuts in electricity and the reductions in gas pressure could be obviated by the greater use of solid fuel appliances. Continuous, slow-burning appliances meant that much less of the auxiliary fuels was needed to "top up," and if only a little more solid fuel could be released to the domestic consumer this could be brought about.

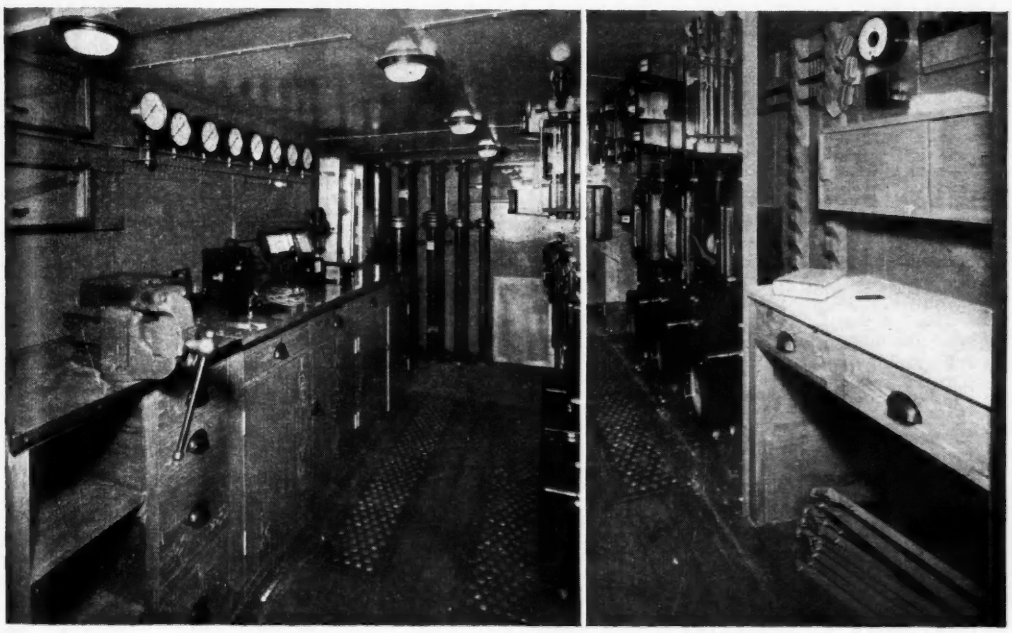
Dr. A. Parker (Director, Fuel Research Board) put in a word for coke burning. A move in this direction, he said, would be better than trying to burn bituminous coal smokelessly. Even to-day when it was quite easy to burn coal smokelessly in big industrial boilers, but it was not easy for the householder to burn coal smokelessly in a domestic stove. People asked why it was necessary to burn solid fuel when it was much easier to use gas or electricity. He would prefer gas and electricity if he could have them all day and at reasonable prices, but this was impracticable because it would mean capital plant lying idle at the manufacturing stations and only being used to meet the winter load, thereby putting up the price. The only way of meeting the main winter load was by solid fuel.

A representative of the distributors argued against the adoption of appliances which burnt several types of fuel. He could foresee a tremendous battle on the part of salesmen advocating gas and electricity, and believed that these would be sold on the merits of salesmen and not of the appliances.

"FLYING SQUAD" FOR FUEL EFFICIENCY

THE Ministry of Fuel and Power has for long been publicizing its advisory service in the technical Press, a service which provides free advice for industrial concerns from the Ministry's Regional Fuel Engineers and which has proved useful to firms all over the country in reducing fuel wastage. An addition to this service has now been made in the form of a fuel efficiency "flying squad"—a mobile testing unit with up-to-date heat measuring apparatus and staffed by technical experts which is available to visit works in any part of the country.

Already the unit has been booked to visit works at Bradford, Birmingham, Galashiels, Paisley, Reading, Wishaw, and Dumfries to carry out tests in a wide variety of industries. On completion of each test, the management will receive a full report of the survey with conclusions and recommendations. The Ministry states that the service is being inaugurated so that industrial fuel consumers may have readier access to "instrumentation and measurement" methods of improving fuel efficiency. The unit will be available to visit works in any part of the country to assist managements in obtaining, free of charge, full information regarding process heat requirements, and target figures of fuel consumption.



The Ministry of Fuel and Power's new mobile testing unit which is to be available to firms in all parts of the country to carry out tests and to provide reports on fuel consumption. It forms a part of the Ministry's Advisory Service which gives free advice on fuel economy. Left: A general view of the interior of the unit, which has been built into a converted ex-R.A.F. radar van, showing the benches and some of the instruments. Right: One of the detachable instrument panels, which can be used either in or out of the vehicle, as required.

The mobile unit has been built into an ex-R.A.F. radar van, specially adapted to transport delicate equipment over the roughest ground. It has a floor-space of 15 ft. by 18 ft. and is fitted with detachable instrument panels made of aluminium which can be used either in the van or outside it. The equipment includes a six-point temperature recorder which can be used on three ranges: 0-500°C., 0-1,000°C., and 0-1,600°C. There are two two-point temperature recorders, a number of temperature indicators of various ranges with multi-point selector switches, a steam flow indicator, a CO_2 recorder and indicator, and two steam flow recorders, one using the normal mercury U-tube differential, the other an aneroid bellows type differential. Both the latter are provided with three-range tubes to give full-scale deflection on three different flows.

A wide range of orifice plates and carrier rings is carried, covering pipe sizes up to 6 in. bore. A differential pressure recorder with a differential of 3 in. W.G. is available for recording gas flow, and the equipment also includes pressure recorders with a variety of ranges from a few inches W.G. to 500 p.s.i., recording and indicating draught gauges, a modified Orsat gas analysis outfit, water testing outfit, workshop potentiometer, millivolt meter, multi-range ammeter, kW meter, tachometer, velometer, surface pyrometer, steam engine indicator, and stocks of chemicals and reagents. Fitted with benches as a well-equipped engineer's workshop, the van carries its own cable drums so that its switchboard may be coupled to a works supply for power purposes.

Where works are already fairly well equipped, the unit may be able to demonstrate instruments not previously employed. The data obtained by the unit will make available to managements a complete picture of the heat and power utilization of the works. Last week the unit was on view outside the Ministry of Fuel and Power offices where it was inspected by the Minister, Mr. Hugh Gaitskell.

The Formation of a Gas Grid in West Scotland is suggested in a notice of motion submitted to Glasgow Gas Committee by Councillor Lawrence Blanche, who invites the Committee to suggest to the Ministry of Fuel and Power that the whole gas area in West Scotland, or the immediate surroundings of Glasgow, should be examined with a view to forming a grid system under which surplus gas would be passed from the outer undertakings to relieve the acute shortage in the city. Councillor Blanche also proposes setting up a special committee to negotiate with the Ministry on the re-opening of Coatbridge Gas-Works. The Committee has agreed to negotiate with the National Coal Board for the purchase of coke oven gas from Dumbreck Colliery, Kilsyth, despite a report that the colliery gas would cost not less than 3s. per 1,000 cu.ft., whereas other coke oven gas is being obtained for 1s. 4d. per 1,000 cu.ft.

The British Coke Research Association is holding its third conference at the Royal Institution, Albemarle Street, W.1, on Dec. 15, when a report of the Pontypridd Test Plant Committee, entitled "A Study of the Pressures Developed by British Coals During Carbonization," will be considered.

Area Managers, Salesmen, Inspectors, and Fitters of the West Riding group of gas companies (U.K. Corporation) recently attended a series of lectures at Wakefield and York by Mr. G. F. Jenkins, of Main Water Heaters, Ltd. Aided by lantern slides and sectional models, Mr. Jenkins explained fully the general construction and special features of his firm's storage and instantaneous types of water heaters, including the G.L.C. circulator.

The District Foremen's Association of the South Metropolitan Gas Company visited the works of Ascot Gas Water Heaters, Ltd., in full strength recently. To avoid interference with essential work on the district the Association was split into two parties, making the visit on different days. A full and busy afternoon was spent on each occasion in an intensive tour of the factory and examination of the newest machines and production methods. After tea the technical training film, "Symbols of Service," was shown in the Educational Centre, and speeches of thanks were made by Mr. H. Wratten, Hon. Secretary of the Foremen's Association, Mr. Walton, Assistant Hon. Secretary, and Mr. A. Ridley, District Manager.

TRADE NEWS

A handsomely produced booklet on aluminium paste, published by the British Aluminium Co., Ltd., Salisbury House, London Wall, E.C.2, forms an attractive introduction to the uses and qualities of this product in industry. Aluminium paste contains about one-third of its weight of mineral spirits and is cleaner to handle and easier to mix with paint vehicles than is dry aluminium flake powder. It has high durability, moisture-resistance, reflectivity, and excellent hiding power. The booklet gives hints on the technique of painting with aluminium and illustrates its use in vehicles, gasholders, oil storage tanks, bunkers, and bridges. There is a section of technical information on the testing of the paste, and some notes on its storage.

GAS UNDERTAKINGS' RESULTS

Gas Supply Company (Melbourne)

Profit for the year ended June 30 was £21,787 against £19,433 for the previous year. A dividend of 5% leaves £3,297 to be carried forward against £2,490 brought in. The railway strike in Queensland, where the Company has three branches, seriously affected sales in that State, and gas rationing affected sales elsewhere; nevertheless sales were approximately 4% greater than in 1946-47. Sales of appliances were limited by the availability of appliances, piping, and labour, but were slightly above those for the previous year. Gas sales have increased 110% over the last 10 years. The Company has acquired the undertaking of the Colac Gas Company, from whose area considerable increases in gas sales are expected. Gas sales at Colac for the year ended June 30 totalled 26,300,000 cu.ft.

* * *

Southport Gas Department

The Southport Gas Department, which celebrated its centenary a few weeks ago, made 6,795,669 therms of gas, of which 143,429 therms were recovered as benzole, in the year ended Mar. 31, showing an increase of nearly 60% on pre-war records. Mr. H. James Risby, General Manager, in his recently-issued annual report, records that gas sales increased by 1.77% over the previous year, following an increase of 14.36%, the difference being due to the intensive economy campaign designed to minimize gas consumption in the interests of coal conservation. There was a loss on revenue account of £8,033, but Mr. Risby points out that £5,000 was transferred to relief of rates, making a total contribution to date of £461,495. The position regarding carbonizing plant is described as critical. The pre-war effective plant capacity for base load production approximated to 49 mill. cu.ft. per week; this included a horizontal plant which is now derelict and requires replacement. Since then, gas production has increased by 60%, while the capacity is reduced to 31½ mill. cu.ft. per week. Steps have been taken with regard to the erection of new plant. The work of replacing old meters is proceeding briskly and a gradual reduction of unaccounted-for gas reflects the value of this policy. The number of meters changed and fixed during the year was 4,268, and the total number of meters in use at the end of the year was 31,048, an increase on the previous year of 436.

"Fuel Economy Review," 1948

The F.B.I. "Fuel Economy Review" for 1948 (Federation of British Industries, 21, Tothill Street, S.W.1; price 2s. 6d.) contains articles contributed by recognized authorities on various aspects of fuel technology dealing with steam generation and utilization, industrial gas turbines, modern methods of space heating and ventilation, thermal insulation, feed water treatment, and automatic fire protection systems. The Review is designed to appeal to executives, and the technical information is presented and illustrated in a form easily to be understood by technical and non-technical readers. Articles in this issue include the following: The Gas Turbine for Industrial Use; Steam in Industry; The Function of Steam Traps in Fuel Economy; The Thermal Insulation of Industrial Buildings; The Elimination of Fuel Costs by the Harnessing and Control of Free Power as Applied to Natural Ventilation; A Modern System of Industrial Space Heating Relating to Fuel Economy; Prevention of Scale Formation and Corrosion in Water-Supply Systems; Efficient Steam Raising by Instrument Control; Mechanical Coal Handling Equipment; The Automatic Sprinkler and Fire Alarm System.

Our photograph shows a Ewart M.75 sink geyser fitted by the Slough Gas Light and Coke Company as a multipoint to supply hot water to the sink in their demonstration theatre. The M.75 can alternatively be used as a single-point geyser with swivel spout.

Mr. Colin Woodall, London Area Sales Manager, Parkinson Stove Co., Ltd., and Captain of the Parkinson & Cowan London Clubs' Cricket Team, receives the loser's memento of the 1948 Inter-Company cricket match from Mr. H. E. "Tom" Dollery, the well-known England and Warwickshire batsman. The presentation was made at the Annual Dinner of the Parkinson Stove Company Cricket Club held at the Stechford works recently. The Captain of the Stechford Team, winners of the Inter-Company match, received from Mr. Dollery an urn containing "The Ashes."

GAS STOCKS AND SHARES

Reinvestment demand and increased attention to the Berlin situation are blamed for a wave of dullness which has affected both industrials and Government securities this week. Mr. Churchill's attack on the Government's defence policy also had its effect on trading. Towards the end of the week, dealers in British Funds were talking of increased selling with few buyers about, and prices generally moved to lower levels. Scattered selling generally depressed the industrial market.

The *Financial Times* Industrial Ordinary Index suffered its largest fall since Sept. 9 at 120.7, down 0.6, after advancing more or less continuously since July 19. The Government Securities Index was similarly affected. On the other hand National Savings took a turn for the better, according to figures issued for the week to Nov. 27. They showed a net excess of new savings over encashments of £1,179,000 as compared with only £550,000 in the preceding week.

Stockholders' interest in the Government's steel take-over terms was still bitter, and culminated on Nov. 6 in a protest issued by the Association of Investment Trusts and the Investment Protection Committee of the British Insurance Association.

Dealings in gas shares totalled 214. The week's official price changes were:

OFFICIAL LIST

Alliance & Dublin cons. ord.	21/6	— 23/6	—6d.
Barnett ord. 7 p.c. max.	153	— 158	—1
Gas Light & Coke 3¾ red. pref.	97½	— 100½	+½
Gas Light & Coke 3 p.c. con. deb.	85½	— 88½	—½
Plymouth & Stonehouse ord. (xd Dec. 1.)	109	— 114	—1
Portsmouth & Gosport cons.	147	— 152	+1
Portsmouth & Gosport 5 p.c. max.	102	— 107	+2